DOCUMENT RESUME

ED 119 832 PS 008 395

AUTHOR Stein, Aletha H.; Baltes, Paul B.
TITLE Theory and Method in Life-Span Development Psychology Implications for Child Development.
PUB DATE 12 Apr 75
NOTE 20p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (Denver, Colorado, April 10-13, 1975)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage
DESCRIPTORS Age; Behavior Development; *Behavior Theories; *Child Development; *Developmental Psychology; *Human Development; *Research Methodology
IDENTIFIERS Developmental Continuity

ABSTRACT

This paper elucidates the implications of life-span developmental psychology for theory and method in the field of child development. Emphasis is given to three theoretical issues: (1) historical-evolutionary versus ontogenetic components of change, (2) the role of chronological age, and (3) continuity versus discontinuity in the description and explanation of behavior development. Two methodological issues are discussed: (1) the conceptual and methodological distinction between developmental change versus developmental differences and (2) the problem of examining historical, distal relationships among variables. While none of these is completely novel in developmental psychology, lifespan research and theory has led to propositions and arguments which accentuate, clarify, and articulate important developmental issues. It is concluded that child development researchers need to recognize these issues and that such recognition should lead to a heightened understanding of the unique aspects of a developmental approach to the study of behavior and to novel questions, interpretations, conceptualizations, and methods of study. (Author/JMB)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED119832

PS 008395

Theory and Method in Life-span Developmental Psychology

Implications for Child Development

Aletha H. Stein and Paul B. Baltes

The Pennsylvania State University

College of Human Development

April 12, 1975

Society for Research in Child Development

Denver, Colorado

Part of a symposium manuscript edited by Paul B. Baltes (Ed.), Implications of Life-span Developmental Psychology for Research and Theory in Child Development, 1976, in preparation. (Submitted).

10/10/75 IFS 6020:PBB

Theory and Method in Life-span Developmental Psychology: Implications for Child Development

Introduction

If the discussion and presentation of a life-span developmental approach to the study of behavior is perceived to be new in the field of human development, then this is a matter of something getting "lost on the way to the forum." Historical reviews (Charles, 1970; Groffmann, 1970; Hofstatter, 1938) document that considering development at all levels of the life span was very much in the center of early work in the developmental field. In fact, one of the earliest comprehensive books on human development (1835 in French; 1838 in German; in English) was written by a life-span developmentalist: A. Quetelet, a Belgian scientist, who displayed competence as a mathematician, sociologist, and psychologist. Quetelet presented a large body of data on behavior encompassing the entire life span particularly in the area of mental abilities.

Quetelet's early contributions--little known in the United States--can be taken as a historical marker for developmental research in general. While in Central Europe a life-span developmental approach continued to flourish (Buhler, 1933, 1959; Thomae, 1959, 1968) or at least to hold its own, contributions in the Anglo-American literature with few exceptions (e.g., Bloom, 1964; Brim, 1966; Erikson, 1959; Havighurst, 1948; Neugarten, 1968) remained sparse, disjointed, and faint-hearted. Proponents of the usefulness of a life-span approach were to be found primarily in two occasionally interrelated quarters: sociologists or social psychologists interested in socialization or age-cohort stratification (e.g., Brim, 1966; Keniston, 1971; Riley, et al., 1972) and developmental psychologists interested in adult development and aging (e.g., Buhler & Massarik, 1968; Pressey & Kuhlen, 1957; Neugarten, 1968).

In our view, as these two interest groups of sociologically-oriented psychologists and life-span gerontologists did not particularly focus on the merits of an experimental-manipulative approach to the study of development, their important theoretical contributions did not find significant resonance among mainstream developmentalists. American developmental psychology in the Fifties and Sixties was trapped in a methodological crisis and transition and, therefore, was apt to reject creative and conceptually compelling ideas for the wrong reasons, i.e., for its period-centric overcommitment to manipulative research. The type of correlational-naturalistic research which characterized most life-span developmentalists at that time, therefore, was not conducive to bringing a life-span approach into the center of attention.

Although we should be careful in our evaluation of recent trends in developmental psychology (e.g., Looft, 1972), we believe it is fair to conclude that the last five years have seen American developmentalists to be attracted to a life-span developmental approach in great force. On the one hand, there are a number of review volumes which were generated in conjunction with the "West Virginia Conferences on Life-span Developmental Psychology" (Baltes & Schaie, 1973a; Goulet & Baltes, 1970; Nesselroade & Reese, 1973) to which a large number of researchers with diverse bends and theoretical commitments (including core experimentalists) contributed. On the other hand, there is a rapidly growing thrust of empirical research of the life-span kind, but also a surge of life-span developmental textbooks (e.g., Hurlock, 1968; Kaluger & Kaluger, 1974;

Lugo & Hershey, 1974; Newman & Newman, 1975) both giving testimony to the fact that the call for considering the entire spectrum of life in developmental work is coming to fruition.

For persons involved in a life-span developmental endeavor, this growing belief in the usefulness of a life-span approach to the study of behavioral development is a logical and satisfying trend. At the same time, however, it has become conspicuous to the careful observer that "it appears easier to start a revolution than it is to carry it to impressive heights or even victory" (Baltes & Schaie, 1973b, p. 395). In order for a life-span developmental approach to survive and to contribute vigorously, it is necessary to go beyond suggestive persuasion and to articulate its conceptual and empirical usefulness. The purpose of the present symposium is to clarify theoretical and methodological implications of a life-span developmental approach for research and theory in child development. A counterpart effort has been made recently (Baltes, 1973) dealing the implications of a life-span developmental approach for the study of aging.

Prototypical Issues in Life-span Development

Our basic argument is that a life-span conceptualization is not qualitatively different in theory and method from age-specific approaches such as infant or child development (e.g., Baltes & Schaie, 1973b; Bromley, 1970). However, a life-span developmental orientation has led to a dramatic accentuation of a number of basic issues in developmental theory and method. These basic issues--though present and touched upon in the child development literature--have never attracted the level of discourse by child developmentalists which they deserve. The purpose of this paper is to identify some of these issues and to illustrate how a life-span developmental approach makes them apparent and critical to such a degree that denial or indirect cover-ups (e.g., by delegating them to the level of error or meta-assumptions) is no longer possible.

The following prototypical issues and key conclusions are derived from a review of the theoretical and empirical literature on life-span human development (Baltes & Schaie, 1973a, Goulet & Baltes, 1970; Nesselroade & Baltes, 1973); the set of issues delineated is not comprehensive but selective. For a more detailed empirical and theoretical account of the rationale for these conclusions, the reader is referred to Baltes and Schaie (1973b), Riegel (1972, 1975, unpublished), or Baltes and Willis (1976).

Theory

Life-span developmental psychology is defined as dealing with the description, explanation, and modification of behavioral change from conception to death (e.g., Baltes, 1973; Baltes & Goulet, 1970). Comparisons of widely differing age groups provide one means of formulating hypotheses and extending theoretical constructs across the life-span, but it is important to realize that a life-span developmental approach does not necessarily lead to a comparative analysis of organisms of all ages or developmental levels. The center of attention is a behavior-change process which has intrinsic life-span perspectives.

The study of organisms across many developmental levels typically can provide some initial leads concerning the processes that may be examined. A comparison of cognitive style changes in children and elderly individuals (Denney & Wright, 1975) is an example of the first step

within a life-span framework. Another is Goulet's (1973) attempt to design explanatory research in the area of developmental memory making use of subject populations from the entire spectrum of the life-span. However, the life-span view suggests going beyond these age comparisons to an examination of the processes involved in the observed changes and to examination of inter-individual differences in change. The primary function of the initial age comparisons is to elucidate, stretch, and clarify one's constructs and to suggest which explanatory principles accounting for developmental change may be most fruitfully pursued in further research.

In this vein, it is possible to conduct meaningful life-span research within a restricted age range (such as childhood) if the target behavior process under investigation is related to a life-span conception. The use of developmental simulation (Baltes & Goulet, 1971) is a case in point. In a developmental simulation study, for example, it is possible to create within a given age group (e.g., college students) conditions which demonstrate ontogenetic changes representing segments of the entire life-span. In fact, Sjostrom and Pollack (1971) have done exactly this in a life-span study on visual illusions. Since it is occasionally argued that life-span developmental research is extraordinarily tedious, it is important to keep in mind that empirical life-span work does not necessarily include persons from the full spectrum of the life-span nor is it necessarily longitudinal. The key focus is on the analysis of a behavior-change process which has been derived within a life-span framework.

While expanding the notion of development across a broader age range, the life-span perspective in no way suggests ontogenetic change as the only or even the primary basis of development at any point in time. By contrast, historical-evolutionary sources of change are given more emphasis than is usually the case in developmental theories. The life-span view also contradicts the notion that childhood is a preparation for a static point of final maturity at age 18 or 21. Until recently, the final stage in most child development theories was defined at adolescence. With a life-span perspective, it is not realistic to expect childhood socialization to carry the burden for adequate functioning throughout adulthood. Nor is it theoretically possible to predict adult behavior fully from childhood characteristics, because neither evolutionary-cultural-historical changes nor outcomes of ontogenetic change can be predicted with a high degree of accuracy. One must expect continuing change and continuing need for intervention, education, and new forms of socialization throughout life.

Three related theoretical issues have been selected to illustrate the contributions of life-span work for theory in child development in greater detail: (1) Dialectics of ontogenetic and historical-evolutionary sources of change, (2) Age-irrelevance of developmental change, and (3) Descriptive and explanatory continuity versus discontinuity.

Dialectics of ontogenetic historical-evolutionary sources of change. One theoretical issue which has been sharpened by life-span developmental research and theory is that of the relationship between ontogenetic and historical-evolutionary sources for behavioral change.

Traditionally, child development research has been conducted in a fairly invariant ecology within a given cultural setting and for an invariant biological species. Comparative developmental psychology

(Baltes & Goulet, 1970), be it of the comparative-behavior, comparative-culture, comparative-species, or comparative-generation type, has first attracted major attention to intergroup differences in developmental phenomena. The focus of many comparative developmental approaches, however, is largely a static one in its examination of differences in developmental change rather than of the dynamics involved in the genesis of development.

Life-span research and theory has illustrated an interactive and dynamic conception of the relationship between ontogenetic and historical-evolutionary sources of change. There are two concrete examples for this conclusion. On an empirical level, there is the fact of pervasive cohort differences in personality and cognitive functioning (Goulet, Hay, & Barclay, 1974; Nesselroade & Baltes, 1974; Schaie, 1970). On a theoretical level, there are efforts to develop conceptions which consider the conjoint effects of ontogenetic and historical-evolutionary determinants (Buss, 1974; Riegel, 1972, 1975) in the generation of life-span change. The formulation of dialectic models of development by Klaus F. Riegel and colleagues (Riegel, unpublished) is perhaps the most explicit statement of an interactive position asserting that ontogenetic and historical-evolutional sources are intrinsically and dynamically related during ontogeny (see also Baltes & Willis, 1976). Historically, of course, a similar view has been promoted by sociologically-oriented developmentalists (see Bengtson & Black, 1973; Brim, 1966; Elder, 1975; Neugarten & Datan, 1973) interested in formulating conceptions dealing both with cultural change and ontogenetic development.

In practice, one implication of this position is that child development researchers should be more attentive to social-cultural influences on children, particularly those which change over time. For example, most of the available research on children's social development is focused on individual experiences with other people, primarily the parents. A small amount of literature on schools and mass media as socializing agents is a step in the direction of recognizing the impact of the larger society on the child, but virtually none of this research takes into account changes in these institutions over time. In the case of television research, for example, little attention has been given to the changes in television content over time (e.g. regular increases and decreases in the levels of violence portrayed). In a few early studies (Schramm, Lyle, & Parker, 1961), an assessment of the impact of the introduction of television into children's lives was attempted. Current research efforts could benefit from comparisons of cohorts for whom childhood television differed in specifiable ways (e.g. before and after the introduction of "Sesame Street").

Another area in which such an emphasis appears particularly appropriate is sex role development. Kohlberg (1966) called attention to the common elements in children's sex role concepts and related behavior that override wide individual differences in parental behavior. While he emphasized the ontogentic basis for commonality in development, some of the developmental changes that he discussed could be influenced by social and cultural variations. For example, he posited the development of cognitive gender identity, or the conception of oneself as male or female, as a critical element in sex role learning. Yet, it seems likely that

the relative emphasis on sex differentiation in a given culture would influence the timing and salience of gender identity concepts. With the current interest among some groups in socialization toward androgyny, research concerning sex role differentiation and gender identity concepts among children in cultural milieus where sex differences are minimized would be of particular interest.

A second process proposed by Kohlberg as inherent in the child is valuing those characteristics associated with oneself--in this instance, maleness or femaleness. Differences in the cultural value associated with sex roles could, however, be at least as influential as this supposedly inherent process. Kohlberg's own data (Kohlberg & Zigler, 1967) indicate that females do not follow his proposed developmental sequence, perhaps because they increasingly appreciate the low value attached to the feminine role in current American society. Changing cultural values might also alter the pattern of sex role adoption over time.

The focus on the interaction of ontogenetic and bio-cultural sources of developmental change is exemplified in some research on children, primarily through studying children with different individual experiences within the same cultural milieu. For example, Money & Ehrhardt (1972) have demonstrated behavioral differences between females exposed to high levels of androgen prenatally and females with normal prenatal chemical environments. Comparative research on other species indicates that the period in ontogenetic development when the androgen exposure occurs is crucial in determining the long-range behavioral changes that result (Money & Ehrhardt, 1972). Attempts to specify critical periods for attachment formation in infancy and consequences for later social relationships (e.g. Bronfenbrenner, 1968; Caldwell, 1962) are another example of implementation of the interaction conceptualization. Research on father absence (e.g. Hetherington, 1966) also indicates that the later behavioral outcomes of separation from the father depend on the age of the child at the time of separation.

Similar attempts to investigate interactive relationships between ontogenetic processes and broad cultural influences could be quite useful. One example of such an effort is a 10-year longitudinal study of the relation of television violence to aggressive behavior (Lefkowitz, Eron, Walder, & Huesmann, 1972). Television viewing patterns and peer ratings of aggression were assessed at ages 8 and 18. For boys only, preference for televised violence at age 8 was correlated with aggression at 18. Aggression at 18 was not related to the males' concurrent television preferences. Using time-lag methods to be discussed later in this paper, the authors inferred that early exposure to and preference for television violence was causally related to later aggression. It would be interesting to extend this study to other cohorts to determine whether different patterns of development would result from the interaction of different modal television environments with ontogenetic development.

The focus on cultural and historical change in the life-span perspective highlights the danger of drawing conclusions from a study in one time period. Child developmentalists are usually cautious about generalizing findings across cultures or across social classes, but we often do not recognize similar limitations in generalizing findings over historical time. Yet, changes in observed patterns of relationships may occur if the mean levels of a given environmental variable change over time.

For example, Bronfenbrenner (1958) presented a convincing case for the notion that middle class parents as a group became more permissive from the period before World War II to the post-war period. Thus, studies at these two periods were probably sampling different portions of the total possible distribution of permissiveness. If the relation of permissiveness to independence, for instance, were not linear throughout the entire range of these variables, one would find different correlations in one segment of the distribution than in another. Other data suggest that, indeed, many such socialization relationships are not linear (Baumrind, 1971; Bronfenbrenner, 1961), so it seems probable that cohort changes in mean levels would yield different patterns of findings.

Life-span research and theory, therefore, as a minimum has shown why any child development theory which assumes a position of ecological invariance has shortcomings in precision and scope. Moreover, it has opened up a powerful avenue toward novel conceptualization of ontogenetic change phenomena in a changing biological, physical, and cultural world.

Age-irrelevance of developmental change. It has been argued by some developmentalists (e.g., Baer, 1970) that it is theoretically shortsighted to consider chronological age as the primary organizing variable in developmental psychology. Life-span developmental theory provides for novel and supplemental arguments on this question.

First, life-span research shows a systematic increase in interindividual differences with age during adulthood (e.g., Baltes & Willis, 1976; Maas & Kuypers, 1974). Changes in the magnitude of interindividual differences in childhood are more difficult to document, but may exist. One strategy for detecting increased (or decreased) individual differences as well as for deriving some of the principles for explaining developmental change is exemplified by Gewirtz' (1965) comparison of the course of the smiling response during the first year of life in four child-rearing environments in Israel. While all groups developed social smiling at approximately the same age and at approximately the same initial frequency, home-reared babies manifested increased frequencies over time while institutionally-reared infants manifested decreased frequencies. The net result was larger intergroup differences at one year than at three months.

In principle, of course, interindividual differences might decrease over time if common cultural forces impinged on a behavior that was under more idiosyncratic control in an earlier period of development. Some theorists (e.g. Douvan & Adelson, 1966) have proposed, for instance, a relatively sudden increase in pressures on girls to be feminine at adolescence that might reduce the variability in sex role adoption characteristic of early and middle childhood. In either case, the point is that developmental changes in inter-group or inter-individual differences may provide more interesting information than simple age changes in means.

The marked cohort differences in personality and intelligence (Nesselroade & Baltes, 1974; Schaie, 1970; Schaie & Gribbin, 1975) are another demonstration of the lack of primacy of age-related change patterns. For example, in a recent study of cooperation in preschool children (Barnes, 1971) there were lower frequencies of cooperative and associative social play than those observed by Parten (1932). The author suggested a number of possible reasons for these cohort differences including mass media, smaller families, and different types of toys. Although these interpreta-

tions obviously require further investigation, they exemplify a direction in which one might go using a life-span view to formulate hypotheses. The search for life-span changes is less guided by age-graded patterns than by a taxonomy of life events (e.g., school entry, marriage, widowhood, retirement) which are related to chronological age only in theoretically irrelevant ways.

Second, life-span developmental theory suggests that systematic behavior-change not only exists at all levels of ontogeny including infancy and old age, but also that such change patterns are both multi-directional and/or partial or truncated. The discrepant developmental life-span functions for crystallized and fluid intelligence (Horn, 1970) are an example for such multidirectional change functions within a closely related set of behaviors, i.e., intellectual performance. The apparent absence of age changes in moral behavior corresponding to those demonstrated for moral judgment in childhood (Grinder, 1964) is another. Multidirectionality of behavior-change requires a theoretical analysis which goes beyond the operation of a single-agent or unitary variable such as chronological age and beyond the formulation of invariant and sequentially-fixed chains of developmental processes.

The assumption of multi-directional and multiply-determined change patterns also leads to interindividual and inter-group differences in the patterns of change (as opposed to the timing of change discussed earlier). For example, some theorists (e.g. White, 1973) have proposed a reversed order of Erikson's stages of identity and intimacy for females in our culture, primarily because of the differing emphases on preparation for a career vs. marriage and family in adolescence for the two genders. Different developmental patterns also appear for males and females in longitudinal research (Bayley, 1968; Crandall & Battle, 1970; Kagan & Moss, 1962). Identification of different developmental patterns for groups divided on subject variables, is, however, only a first step because these variables provide little explanatory power. They should lead to examination of process variables with theoretical meaning. For example, one might look at developmental patterns for subjects with differing patterns of sex role identification or differing role models.

Life-span developmental theory, then, is apt to further refine the criticism of the chronological age variable on a conceptual level (Baltes & Willis, 1976). Ontogenetically-based developmental change is but a subset of the class of developmental processes, and the widespread focus on age-developmental theory is often accidental and related to the heavy emphasis placed on growth models during the formative periods of child development. The all-inclusive concern of developmental psychology is with systematic long-term behavior-change processes, only some of which are usefully related to chronological age.

Descriptive and explanatory continuity versus discontinuity. A third theoretical issue elucidated by life-span theorists is that of developmental continuity versus discontinuity. Kagan's (1969) and Neugarten's (1969) contributions are most salient in this regard from a historical perspective.

In child development theory and research, the issue of continuity versus discontinuity has been largely treated either as one of methodology (e.g., Beilin, 1971; Wohlwill, 1973), metatheory (Reese & Overton, 1970), or one of the adequate description of quantitative versus qualitative

change. Descriptive discontinuity occurs when the behaviors or constructs in a later stage of development are emergent or qualitatively different from an earlier stage so that they cannot be described simply as combinations or quantitative increases of elements present in an earlier stage (Overton & Reese, 1973). Many child development theorists and researchers have been sensitive to the issue of descriptive continuity. Theories that postulate stage-related qualitative changes, such as that of Piaget, involve descriptive discontinuity. At the empirical level, studies by both Emmerich (1964) and Maccoby and Feldman (1972) have examined longitudinal data to determine whether phenotypically different behaviors at different ages were sufficiently related to infer that they represented the same underlying dimensions or whether qualitatively new dimensions were emerging.

When proceeding to the phase of "developmental explanation" (Baltes & Schaie, 1973b), explanatory discontinuity occurs when behavioral antecedents or mediating processes at one period in development differ from those at another period. In this respect, Piaget's theory is largely continuous in that it maintains a set of invariant mechanisms (e.g., assimilation and accommodation) to operate at all levels of ontogeny (see also Riegel, 1973). With regard to organismic theory (inclusive of Piaget's theory), Reese and Overton (1970) have correctly pointed out that the continuity-discontinuity issue applies potentially both to the descriptive representation of the phenomenon and its developmental explanation.

Life-span theory and research further illuminate the issue of descriptive and explanatory continuity versus discontinuity and demonstrate that the issue has substantive and empirical value beyond questions of methodology and metatheory. Life-span research has shown that chronological age becomes less powerful and interindividual differences increase with development. In addition, multidirectional and truncated change sequences emerge with greater frequency. Furthermore, both historical-evolutionary and ontogenetic influences conjointly define the course of behavioral development. These facts and arguments lead to the conclusion that the descriptive course and explanatory determinants of development may exhibit both continuous and discontinuous relationships (Baltes & Schaie, 1973b).

For example, explantory discontinuity would exist if intellectual performance in children were regulated primarily by maturational components while intellectual performance in adulthood was largely a function of environmental influence systems. Such a discontinuity is represented by the conclusion (Baltes & Schaie, 1973b) that organismic models of development may be most appropriate for childhood intelligence whereas mechanistic models describe adult intelligence best. Another example of explanatory discontinuity appears in a recent departure by Kohlberg (1973) from strict adherence to ontogenetic explanatory processes in moral development across the life span. He suggested ontogenetic-maturational change as the major explanatory principle in early moral development, and experience as an important explanatory principle in later development.

Research conducted from a social learning perspective may also be interpreted as illustrating discontinuity. For example, the initial

appearance of attachment behaviors such as smiling may be primarily a function of maturation, but the subsequent course of the behavior may be influenced primarily by environmental stimulation and reinforcement (Gewirtz, 1965; Schaffer & Emerson, 1964). Both discontinuous and continuous explanatory principles were suggested by Parke (1974) as possible interpretations of age differences in the types of rationales that led to resistance to deviation. In the first interpretation, age differences were attributed to qualitative developmental changes in moral reasoning; i.e. he hypothesized that different cognitive processes might affect moral behavior at different points in development. In the second interpretation, changes were attributed to cumulative experience over time in receiving abstract rationales from socialization agents. In this instance, behavioral changes would result from age-correlated quantitative changes in learning, but the underlying processes would be continuous.

Due to its focus on long-term chain sequences and the changing conditions of ecological settings, life-span theory accentuates the usefulness of both descriptive and explanatory continuity versus discontinuity. Its major contribution is to provide conceptual clarification and methodological tools for determining which assumption is most appropriate in a given instance. It is widely held, therefore, by life-span theorists that life-span developmental change is not easily conceptualized by a monistic model of development nor is it controlled only by age-graded influence systems. Life-span theory emphasizes the usefulness of determining whether change occurs not only for the behavioral phenomenon identified as developmental, but also for the form of explanation most useful at different points in the change sequence. It is also for this reason that a multivariate vantage point (e.g., Baltes & Nesselroade, 1973) is easily embraced by life-span researchers.

Methodology

Two problem areas are chosen to exemplify implications of life-span developmental research for methodology in the field of child development: (1) Developmental change versus developmental differences, and (2) Time-lag and distal-cause designs.

The areas selected parallel in many ways the theoretical issue presented in the previous section. Again, the design questions raised are not necessarily novel to child development research. However, their apparent clarity in a life-span perspective demonstrates the need for forceful consideration and application in work on child development as well.

Developmental change versus developmental differences. Life-span research has established that only under rare and specific conditions can differences between developmental criterion groups (e.g., cross-sectional age differences or longitudinal age differences) be equated with true ontogenetic age changes (e.g., Baltes, 1968; Schaie, 1965, 1973). Cross-sectional age comparisons may reflect cohort differences as well as ontogenetic differences, and they may represent a pattern that is characteristic of the particular socio cultural conditions existing at the time of testing.

Conversely, similarities among different age groups may be a function of current cultural-social conditions or strong situational influences that may mask ontogenetic patterns. For example, experimental studies (Bandura & McDonald, 1963; Cowen, Langer, Heavenrich, & Nathanson, 1969)

have demonstrated that exposure to modeling and reinforcement can alter moral judgment dramatically in a way that overrides age differences that occur under more normative socialization conditions. If a study of moral judgment were conducted at a time when many children were exposed to a peer culture or favorite television programs promoting a particular form of moral judgment, ontogenetic patterns might be difficult to detect. Longitudinal assessments of one cohort may reflect cultural-social changes or invariances as well as ontogenetic patterns, not to mention problems of retest effects and selective drop-outs. They may also be affected by the interaction of ontogenetic development with historical events particular to that cohort.

A direct and valid assessment of the prime target of developmental work, i.e., of intraindividual change and interindividual differences in change, therefore is probably the rare exception and, at the same time, requires much more refined design methodology than is true for the bulk of child developmental work. Both for reasons of internal and external validity, the cross-sectional as well and the simple longitudinal method have been shown to be woefully inadequate for the study of developmental change. Perhaps the best known empirical example for this conclusion is the demonstration that much of the "decline" in intellectual functioning in later life (inferred from cross-sectional studies) is in fact due to cohort differences.

Sequential longitudinal and/or sequential cross-sectional methods (Baltes, 1968; Buss, 1973; Schaie, 1965, 1970) are necessary in order to separate the effects of age, cohort, and time of measurement. Cross-sectional sequences, for instance, would be especially useful in examining developmental phenomena thought to be influenced by social-cultural variables. For example, inferences from cross-sectional studies of sex-typing (Rabban, 1950; Smith, 1939) could be made with considerably more sophistication if such studies were repeated (using different subjects) at several points in time. A combination of cross-sectional and longitudinal sequences (e.g. Kohlberg & Zigler, 1967) also can provide many more useful comparisons than simpler methods.

The usefulness of age/cohort-sequential designs was persuasively demonstrated in a recent sequential-longitudinal study of adolescent personality development by Nesselroade and Baltes (1974) who studied 12-17-year-old adolescents in 1970, 1971, and 1972. On most of the personality dimensions evaluated, the year of measurement (1970 versus 1971 versus 1972) was more important than chronological age. For instance, all adolescents, largely independent of their age or cohort, showed decrements in super-ego-strength, social-emotional anxiety, and achievement from 1970 to 1971 and/or from 1970 to 1972 and an increase in independence during the same time interval. Such historical time differences again focus attention on the importance of cultural-historical change for many of the behaviors with which child developmentalists are concerned, and raise serious questions about the inferences drawn from most of the developmental studies of children currently in the literature.

The methodological work of life-span researchers has easily impressed developmentalists interested in adult development and aging. Child developmentalists, however, for the most part continue to rely primarily on cross-sectional or simple longitudinal designs. This is true despite the fact that initial exploration of the significance of cohort effects

in child development data (e.g., Baltes & Reinert, 1969; Goulet, 1976; Goulet, et al., 1974; Schaie, 1972) has led to clear evidence for their importance especially in light of additional methodological complications such as age-related selective sampling effects (Labouvie, et al., 1974).

It appears justified, therefore, to conclude that much of the available work in child development is based on "malignant" data which are neither tested for cohort effects nor properly examined for a host of additional design error factors. The conceptual distinction and methodological separation of developmental change and developmental differences are ill understood. In this vein, life-span research the design methods derived and the issues stated by some of its proponents are a challenge but also a guide for future methodological work in the field of child development.

Time-lag and distal-cause effects. Since life-span research deals most explicitly with the analysis of long-term phenomena and chains, it has been forced to attend to the issue of structuring time-lagged relationships and performing distal-cause analyses.

The methodological requirements and strategies for long-term causal analyses are only emerging at this time (Wohlwill, 1973). However, it becomes clear that most of the traditional, experimental design methods in the psychological sciences are ill-suited for the assessment of long-term chains and distal causes. Therefore, life-span researchers have pointed to the general usefulness of quasi-experimental designs including various forms of time-series analysis (e.g., Campbell, 1969; Glass, Willson & Gottman, 1972) and path analysis (e.g., Labouvie, 1974, Werts & Linn, 1970).

One ingenious use of distal-cause analyses was the ten-year longitudinal investigation of television violence and aggressive behavior (Lefkowitz, et al, 1972) discussed earlier in this paper. Cross-lagged correlations (i.e., TV at age 8 with aggression at age 18 vs. TV at age 18 with aggression at age 8), were used to show that childhood television preferences predicted later aggression, while childhood aggression did not predict later television interests. Therefore, the authors concluded that there was a causal relationship between early television viewing and later aggression. Path analysis of the data led to the same conclusion (Neale, 1972). A similar approach might be usefully employed in teasing apart the contributions of constitutional differences among infants and parental behavior in the generation of later patterns of parent-child relationship (see also Labouvie, 1974 for additional examples).

With more powerful methods of inferring causal relationships from naturalistic, correlational data, child developmentalists may be lured away from their current heavy reliance on laboratory experiments. The external validity of such studies is severely limited by the fact that conditions can be arranged so that a small situational manipulation will generate a large effect (see Bowers, 1973), but such effects may have little generality over time, across situations, or even to related forms of behavior. For example, the literature is now replete with experimental studies demonstrating that models induce increases in donations to charity, and with studies showing cross-sectional age differences in donation behavior (Bryan, in press). Yet, we know little about the relative importance of modeling in the socialization of altruism nor about the developmental course of such behavior. There is no real reason to believe

that donation behavior generalizes to other behaviors that could be classed as altruism. The use of time-lag and distal-cause methods could generate important information about the role of socialization practices, exposure to models, and other variables as well as permitting a more complex and multi-variate definition of altruism.

Such alternative modes of design and data analysis then are equally important for child development research though the actual use of historical-developmental rather than concurrent paradigms (Baltes & Schaie, 1973b) may be less conspicuous in the study of short-term childhood events than in the study of life-span phenomena. The use of simple cross-time correlation coefficients, for example, when linking time-ordered observations of the longitudinal kind is an ingenious strategy of change analysis. Moreover, much of the available "non-developmental" design methodology is not conducive to a powerful and consistent test of hypotheses derived from developmental theory. In this sense, life-span research methodology and paradigms, because of their conspicuous emphasis on historical-distal relationships, has helped to spell out the rationale for needed design methodology so that theory and method in developmental psychology can proceed in a concerted and matched fashion.

Summary

The purpose of the present paper was to elucidate implications of life-span developmental psychology for theory in method in the field of child development. Emphasis was given to three theoretical issues: Historical-evolutionary versus ontogenetic components of change, the role of chronological age, and continuity versus discontinuity in the description and explanation of behavioral development. Two methodological issues were discussed: The conceptual and methodological distinction between developmental change versus developmental differences and the problem of examining historical, distal relationships among variables.

It was argued that none of the theoretical and methodological issues raised are completely novel in developmental psychology. However, life-span research and theory due to their concern with the extremities of a developmental approach has led to propositions and arguments which accentuate, clarify, and articulate important developmental issues with a new level of persuasiveness and urgency.

The conclusion is that child development researchers need to recognize the issues raised. Such recognition will not only lead to a heightened understanding of the unique aspects of a developmental approach to the study of behavior but also to novel questions, interpretations, conceptualizations, and methods of study.

References

Baer, D. M. An age-irrelevant concept of development. Merril-Palmer Quarterly, 1970, 16, 230-245.

Baltes, P. B. Longitudinal and cross-sectional sequences for the study of age and generation effects. Human Development, 1968, 11, 145-171.

Baltes, P. B. (Ed.) Life-span models of psychological aging: A white elephant? Gerontologist, 1973, 13, 457-512.

Baltes, P. B., & Goulet, L. R. Status and issues of a life-span developmental psychology. In L. R. Goulet & P. B. Baltes (Eds), Life-span developmental psychology: Research and theory. New York: Academic Press, 1970.

Baltes, P. B., & Goulet, L. R. Exploration of developmental variables by manipulation and simulation of age differences in behavior. Human Development, 1971, 14, 149-170.

Baltes, P. B., & Nesselroade, J. R. The developmental analysis of individual differences on multiple measures. In J. R. Nesselroade & H. W. Reese (Eds.), Life-span developmental psychology: Methodological issues. New York: Academic Press, 1973.

Baltes, P. B., & Reinert, G. Cohort effects in cognitive development of children as revealed by cross-sectional sequences. Developmental Psychology, 1969, 1, 169-177.

Baltes, P. B., & Schaie, K. W. (Eds.) Life-span developmental psychology: Personality and socialization, New York: Academic Press, 1973 (a).

Baltes, P. B., & Schaie, K. W. On life-span developmental research paradigms: Restrospects and prospects. In P. B. Baltes & K. W. Schaie (Eds.), Life-span developmental psychology: Personality and socialization. New York: Academic Press, 1973 (b).

Baltes, P. B., & Willis, S. L. Toward psychological theories of aging and development. In J. E. Birren & K. W. Schaie (Eds.), Handbook of the psychology of aging. New York: Reinhold-Van Nostrand, 1976.

Bandura, A. & McDonald, F. J. Influence of social reinforcement and the behavior of models in shaping children's moral judgments. Journal of Abnormal and Social Psychology, 1963, 67, 274-281.

Barnes, K. E. Preschool play norms: a replication. Developmental Psychology, 1971, 5, 99-103.

Baumrind, D. Current patterns of parental authority. Developmental Psychology Monographs, 1971, 4, No. 1, Part 2.

Bayley, N. Behavioral correlates of mental growth: Birth to thirty-six years. American Psychologist, 1968, 23, 1-17.

Beilin, H. Developmental stages and developmental processes. In D. R. Green, M. P. Ford, & G. P. Flamer (Eds.), Measurement and Piaget. New York: McGraw-Hill, 1971.

Bengtson, V. L., & Black, K. D. Intergenerational relations and continuities in socialization. In P. B. Baltes & K. W. Schaie (Eds.), Life-span developmental psychological: Personality and socialization. New York: Academic Press, 1973.

Bloom, M. Life-span analysis: A theoretical framework for behavioral science research. Human Relations, 1964, 12, 538-554.

Bowers, K. S. Situationism in psychology: An analysis and a critique. Psychological Review, 1973, 80, 307-336.

Brim, O. G. Socialization through the life cycle. In O. G. Brim & S. Wheeler (Eds.), Socialization after childhood: Two essays. New York: Wiley, 1966.

Bromley, D. B. An approach to theory construction in the psychology of development and aging. In L. R. Goulet & P. B. Baltes (Eds.), Life-span developmental psychology: Research and theory. New York: Academic Press, 1970.

Bronfenbrenner, U. Socialization and social class through time and space. In E. E. Maccoby, T. M. Newcomb, & E. L. Hartley, (Eds.), Readings in social psychology. 3rd ed. New York: Holt, Rinehart, & Winston, 1958.

Bronfenbrenner, U. Some familial antecedents of responsibility and leadership in adolescents. In L. Petrullo & B. M. Bass (Eds.), Leadership and interpersonal behavior. New York: Holt, 1961.

Bronfenbrenner, U. Early deprivation in mammals and man: A cross-species analysis. In G. Newton & S. Levine (Eds.), Early experience and behavior. Springfield, Ill.: Thomas, 1968.

Bryan, J. H. Children's cooperation and helping behavior. In E. M. Hetherington, J. Hagan, R. Kron, & A. H. Stein (Eds.), Review of child development research. Vol. 5. Chicago: University of Chicago Press, in press.

Bühler, C. Der menschliche Lebenslauf als psychologisches Problem. (2nd ed.) Göttingen: Hogrefe, 1959 (1933).

Bühler, C., & Massarik, F. (Eds.). The course of human life. New York: Springer, 1968.

Buss, A. R. An extension of developmental models that separate ontogenetic changes and cohort differences. Psychological Bulletin, 1973, 80, 466-479.

Buss, A. R. Generational analysis: Description, explanation, and theory. Journal of Social Issues, 1974, 30, 55-71.

Caldwell, B. M. The usefulness of the critical period hypothesis in the study of filiative behavior. Merrill Palmer Quarterly, 1962, 8, 229-242.

Campbell, D. T. Reforms as experiments. American Psychologist, 1969, 24, 409-429.

Charles, D. C. Historical antecedents of life-span developmental psychology. In L. R. Goulet & P. B. Baltes (Eds.), Life-span developmental psychology: Research and theory. New York: Academic Press, 1970.

Cowen, P. A., Langer, J., Heavenrich, J., & Nathanson, M. Social learning and Piaget's cognitive theory of moral development. Journal of Personality and Social Psychology, 1969, 11, 261-274.

Crandall, V. C. & Battle, E. S. The antecedents and adult correlates of academic and intellectual achievement effort. In J. P. Hill (Ed.), University of Minnesota Press, 1970.

Denney, N. W. & Wright, J. C. Cognitive changes during the adult years: Implications for developmental theory and research. Unpublished symposium manuscript, Department of Psychology, University of Kansas, 1975.

Douvan, E. & Adelson, J. The adolescent experience. New York: Wiley, 1966.

Elder, G. Age-differentiation in a life course perspective. In A. Inkeles (Ed.), Annual Review of Sociology, 1975, 1, in press.

Emmerich, W. Continuity and stability in early social development. Child Development, 1964, 35, 311-332.

Erikson, E. H. Identity and the life cycle. Psychological Issues, 1959, 1, Whole No. 1.

Gewirtz, J. L. The course of infant smiling in four child-rearing environments in Israel. In B. M. Foss (Ed.) Determinants of infant behavior. Vol. 3. London: Methuen & Co., 1965.

Glass, G. V., Willson, V. C., & Gottman, J. M. Designs and analysis of time-series experiments. Boulder: University of Colorado, Laboratory of Educational Research, 1972.

Goulet, L. R. The interfaces of acquisition: Models and methods for studying the active, developing organism. In J. R. Nesselroade & A. W. Reese (Eds.), Life-span developmental Psychology: Methodological issues. New York: Academic Press, 1973.

Goulet, L. R. Longitudinal and time-lag designs in educational research: An alternative sampling model. Review of Educational Research, 1976, in press.

Goulet, L. R., & Baltes, P. B. (Eds.) Life-span developmental psychology: Research and theory. New York: Academic Press, 1970.

Goulet, L. R., Hay, C. M., & Barclay, C. R. Systematical analysis and developmental research: Descriptions of cyclinical phenomena. Psychological Bulletin, 1974, 81, 517-521.

Grinder, R. E. Relations between behavioral and cognitive dimensions of conscience in middle childhood. Child Development, 1964, 35, 881-891.

Groffmann, K. J. Life-span developmental psychology in Europe. In L. R. Goulet & P. B. Baltes (Eds.), Life-span developmental psychology: Research and theory. New York: Academic Press, 1970.

Havighurst, R. J. Developmental tasks and education. New York: McKay, 1948.

Hetherington, E. M. Effects of paternal absence on sex-typed behaviors in Negro and white preadolescent males. Journal of Personality and Social Psychology, 1966, 4, 87-91.

Hofstätter, P. R. Tatsachen and Probleme einer Psychologie des Lebenslaufes. Zeitschrift für Angewandte Psychologie, 1938, 53, 273-333.

Horn, J. Organization of data on life-span development of human abilities. In L. R. Goulet & P. B. Baltes (Eds.), Life-span developmental psychology: Research and theory. New York: Academic Press, 1970.

Hurlock, E. B. Developmental psychology. New York: McGraw-Hill, 1968.

Kagan, J. & Moss, H. A. Birth to maturity. New York: Wiley, 1962.

Kagan, J. The three faces of continuity in human development. In D. A. Goslin (Ed.) Handbook of socialization theory and research. Chicago: Rand McNally, 1969.

Kaluger, G., & Kaluger, M. F. Human development: The span of life. St. Louis, Mo.: C. V. Mosby Company, 1974.

Keniston, K. Psychological development and historical change. Journal of Interdisciplinary History, 1971, 2, 330-345.

Kohlberg, L. A cognitive-developmental analysis of children's sex-role concepts and attitudes. In E. E. Maccoby (Ed.), The development of sex differences. Stanford: Stanford University Press, 1966.

Kohlberg, L. Continuities in childhood and adult moral development revisited. In P. B. Baltes & K. W. Schaie (Eds.), Life-span developmental psychology: Personality and socialization. New York: Academic Press, 1973.

Kohlberg, L. & Zigler, E. The impact of cognitive maturity on the development of sex-role attitudes in the years 4 to 8. Genetic Psychology Monographs, 1967, 75, 89-165.

Labouvie, E. W. Developmental causal structures of organism-environment interactions. Human Development, 1974, 17 444-452.

Labouvie, E. W., Bartsch, T. W., Nesselroade, J. R., & Baltes, P. B. On the internal and external validity of longitudinal designs: Drop-out and retest effects. Child Development, 1974, 45, 282-290.

Lefkowitz, M. M., Eron, L. D., Walder, L. O., & Huesmann, L. R. Television violence and child aggression: A followup study. In G. A. Comstock & E. A. Rubinstein (Eds.), Television and social behavior. Vol. 3. Television and adolescent aggressiveness. Washington: Government Printing Office, 1972.

Looft, W. R. The evolution of developmental psychology: A comparison of handbooks. Human Development, 1972, 15, 137-201.

Lugo, J. O., & Hershey, G. L. Human development. New York: MacMillan, 1974.

Maas, H. & Kuypers, J. From thirty to seventy. San Francisco: Jossey-Bass, 1974.

Maccoby, E. E., & Feldman, S. S. Mother-attachment and stranger-reactions in the third year of life. Monographs of the Society for Research in Child Development, 1972, 37 (1, Whole No. 146).

Money, J. & Ehrhardt, A. Man and woman: boy and girl. Baltimore: Johns Hopkins University Press, 1972.

Neale, J. M. Comment on "Television violence and child aggression: A followup study". In G. A. Comstock & E. A. Rubinstein (Eds.), Television and social behavior. Vol. 3. Television and adolescent aggressiveness. Washington: Government Printing Office, 1972.

Nesselroade, J. R. & Baltes, P. B. Adolescent personality development and historical change: 1970-1972. Monographs of the Society for Research in Child Development, 1974, 39, No. 1, Serial Number 154.

Nesselroade, J. R. & Reese, H. W. (Eds.) Life-span developmental psychology: Methodological issues. New York: Academic Press, 1973.

Neugarten, B. L. Toward a psychology of the life cycle. In B. L. Neugarten (Ed.), Middle age and aging: A reader in social psychology. Chicago: University of Chicago Press, 1968.

Neugarten, B. L. Continuities and discontinuities of psychological issues into adult life. Human Development, 1969, 12, 121-130.

Neugarten, B. L., & Datan, N. Sociological perspectives on the life cycle. In P. B. Baltes & K. W. Schaie (Eds.), Life-span developmental psychology: Personality and socialization. New York: Academic Press, 1973.

Newman, B. M., & Newman, P. R. Development through life. Homewood, Ill.: Dorsey Press, 1975.

Overton, W. F. & Reese, H. W. Models of development: Methodological implications. In J. R. Nesselroade & H. W. Reese (Eds.), Life-span developmental psychology: Methodological issues. New York: Academic Press, 1973.

Parke, R. D. Rules, roles, and resistance to deviation: recent advances in punishment, discipline, and self-control. In A. D. Pick (Ed.), Minnesota symposia on child psychology. Vol. 8. Minneapolis: University of Minnesota Press, 1974.

Parten, M. B. Social participation among preschool children. Journal of Abnormal and Social Psychology, 1932, 27, 243-269.
Pressey, S. L., & Kuhlen, R. G. Psychological development through the life span. New York: Harper & Row, 1957.
Quetelet, A. Sur L'homme et le developpement de ses facultes. Paris: Bachelier, 1835. 2 vols.
Quetelet, A. Über den Menschen und die Entwicklung seiner Fähigkeiten. Stuttgart: Schweizerbart's Verlagshandlung, 1838.
Rabban, M. Sex-role identification in young children in two diverse social groups. Genetic Psychology Monographics, 1950, 42, 81-158.
Reese, H. W., & Overton, W. F. Models of development and theories of development. In L. R. Goulet & P. B. Baltes (Eds.), Life-span developmental psychology: Research and theory. New York: Academic Press, 1970.
Riegel, K. F. Time and change in the development of the individual and society. In H. W. Reese (Ed.), Advances in child development and behavior. Vol. 7. New York: Academic Press, 1972.
Riegel, K. F. Dialectic operations: The final period of cognitive development. Human Development, 1973, 16, 346-370.
Riegel, K. F. From traits and equilibrium toward developmental dialectics. In W. Arnold (Ed.), Nebraska symposium on motivation. Lincoln: University of Nebraska Press, 1975, in press.
Riegel, K. F. Toward a dialectic model of development and aging. Unpublished manuscript. Department of Psychology, University of Michigan.
Riley, M. W., Johnson, W., & Foner, A. (Eds.). Aging and society. Vol. 3: A sociology of age stratification. New York: Russell Sage Foundation, 1972.
Schaffer, H. R., & Emerson, P. E. The development of social attachments in infancy. Monographs of the Society for Research in Child Development, 1964, 29, No. 3.
Schaie, K. W. A general model for the study of developmental problems. Psychological Bulletin, 1965, 64, 92-107.
Schaie, K. W. A reinterpretation of age-related changes in cognitive structure and functioning. In L. R. Goulet & P. B. Baltes (Eds.), Life-span developmental psychology: Research and theory. New York: Academic Press, 1970.
Schaie, K. W. Limitations on the generalizability of growth curves of intelligence: A reanalysis of some data from the Harvard Growth Study. Human Development, 1972, 15, 141-152.
Schaie, K. W. Methodological problems in descriptive developmental research on adulthood and aging. In, J. R. Nesselroade & H. W. Reese (Eds.), Life-span developmental psychology: Methodological issues. New York: Academic Press, 1973.
Schaie, K. W., & Gribbin, K. Adult development and aging. Annual Review of Psychology, 1975, 26, 65-96.
Schramm, W., Lyle, J., & Parker, E. B. Television in the lives of our children. Stanford: Stanford University Press, 1961.
Sjostrom, K. P. & Pollack, R. H. The effect of simulated receptor aging on two types of visual illusions. Psychonomic Science, 1971, 23, 147-148.
Smith, S. Age and sex differences in children's opinion concerning sex differences. Journal of Genetic Psychology, 1939, 54, 17-25.
Thomae, H. (Ed.). Entwicklungspsychologie. Gottingen: Hogrefe, 1959.
Thomae, H. Das Individuum und Seine Welt. Gottingen: Hogrefe, 1968.
Werts, C. E., & Lynn, R. L. Path analysis: Psychological examples. Psychological Bulletin, 1970, 74, 193-222.

White, M. S. Intervention in women's transitional stages. Paper presented at the Conference on Issues in Human Development Intervention, The Pennsylvania State University, University Park, Pa., 1973.

Wohlwill, J. F. The study of behavioral development. New York: Academic Press, 1973.